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SEARCH REQUEST FORM

Scientific and Technical Information Center

(88)

Requester's Full Name: Prochus Laufer Examiner# : _____ Date: 4-16-02
Art Unit: 2100 Phone Number: 301 Serial Number: 101020425
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Title of Invention: _____
Inventors (please provide full names): _____

Earliest Priority Filing Date: _____

**For Sequence Searches Only* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

~~1-7002~~
5,761,301
10/020,425
020, 427
017, 965
017, 973

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Searcher: <u>S Green</u>	NA Sequence (#) _____	STN _____
Searcher Phone: <u>6-4767</u>	AA Sequence (#) _____	Dialog <u>✓ 50.41</u>
Searcher Location: <u>4B40</u>	Structure (#) _____	Questel/Orbit <u>✓ 26.41</u>
Date Searcher Picked Up: <u>4-17-02</u>	Bibliographic _____	Dr. Link _____
Date Completed: <u>4-19-02</u>	Litigation <u>✓</u>	Lexis/Nexis <u>✓</u>
Searcher Prep & Review Time: _____	Full Text _____	Sequence System _____
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Green, Shirelle

From: Laufer, Pinchus
Sent: Tuesday, April 16, 2002 9:49 AM
To: Green, Shirelle
Subject: Litigation searches

Please generate litigation searches for the following cases:

- | | | | |
|---|------------------------------------|-------------------------------------|--------------------------|
| (1) 10/020,425 | (2) 10/020,427 | (3) 10/017,973 | (4) 10/017,965 |
| each of which is a Reissue of US patent 5,761,301 | | | Inventors: Oshima et al. |
| (5) 09/972,707 | Reissue of US patent no. 5,961,621 | Inventors: William Cupertino et al. | |
| (6) 09/990,327 | Reissue of US patent no. 5,991,749 | Inventors: Paul H. Morrill | |
| (7) 09/932,284 | Reissue of US patent no. 5,935,201 | Inventors: Raffaele Costa et al. | |
| (6) 10/021,783 | Reissue of US patent no. 6,105,030 | Inventors: Nadeem Syed et al. | |

Thank you,

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1 of 1 DOCUMENT

5,761,301

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Jun. 2, 1998

Mark forming apparatus, method of forming laser mark on
optical disk, reproducing apparatus, optical disk and method
of producing optical disk

REISSUE:

Reissue Application filed Dec. 7, 2001 (O.G. Apr. 9, 2002) Ex. Gp.: 3642; Re.
S.N. 10/020,427

Reissue Application filed Dec. 7, 2001 (O.G. Apr. 9, 2002) Ex. Gp.: 3642; Re.
S.N. 10/020,425

Reissue Application filed Dec. 7, 2001 (O.G. Apr. 9, 2002) Ex. Gp.: 3642; Re.
S.N. 10/017,973

Reissue Application filed Jun. 2, 2000 (O.G. Aug. 1, 2000) Ex. Gp.: 3642; Re.
S.N. 09/588,364

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APPL-NO:

560,015

FILED:

Nov. 17, 1995

FOR-PRIOR:

Nov. 17, 1994	Japan	6-283415
Feb. 2, 1995	Japan	7-016153
Oct. 9, 1995	Japan	7-261247

INT-CL:

[6] H04K 1#00

US-CL:

380#4; 235#494; 369#272;

SEARCH-FLD:

380#4; 369#272, 273, 286, 292, 52; 235#494

PRIM-EXMR:

LEXIS-NEXIS
Library: PATENT
File: ALL

Cain, David C.

LEGAL-REP:

Ratner & Prestia

SUM:

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a marking forming apparatus, a method of forming a laser marking to an optical disk, a reproduction apparatus, an optical disk, and a method of manufacturing an optical disk, which may be utilized, for example, to prevent duplication of optical disks.

2. Description of the Prior Art

With increasing use of ROM-type optical disks in recent years, pirated disks have also been spreading, infringing the rights of copyright owners.

This is because ROM disk manufacturing apparatus have been made readily available and also have become easy to operate.

A pirate can make a CD master disk just by extracting logic data from software contained on a CD, copying it onto a magnetic tape, and setting the tape on a mastering apparatus. Hundreds of thousands of pirated disks can be pressed from this single master disk. Since pirates do not, pay royalties, they make a profit by selling pirated disks at a low price. This necessarily means a financial loss to the copyright owner.

According to the current CD specification, only the function of reading logic data from a CD is provided, but no functions are provided to detect physical features of a disk. As a result, a pirated CD can be easily produced by bit-copying the logic data.

The prior art discloses a method of preventing piracy by adding a function to recognize disk physical features.

This method involves establishing a new specification that defines the inclusion of a physical mark on a master disk to prevent the pirating of disks made to this specification. As an example of the prior art, a piracy prevention method is known such as the one disclosed in Japanese Patent Unexamined Publication No. 5-325193. According to that method, in the cutting process the recording beam is deliberately swept in the tracking direction, when recording a designated region, to form a wobbling on the master disk. When the disk is played back on a reproduction apparatus equipped with a wobbling detection circuit, the disk is checked to see whether the wobbling is formed in the designated region. If it is detected that the wobbling of a designated wobbling frequency is formed in the designated region, the disk is judged to be a legitimate disk; otherwise, the disk is judged to be a pirated disk.

More specifically, based on predefined physical mark design data, a physical

mark is formed on the master disk by using a special mastering apparatus equipped with a wobbling function. This prevents pirates from making pirated disks since they do not have such special mastering apparatus nor physical mark design data. Such an anti-piracy mark needs to be formed on every disk made to this specification. However, since it is possible to extract this physical mark by examining a legitimate disk, the prior art method has had the problem that pirated disks may be made if such a special mastering apparatus falls into the hands of an illegal person. In this patent specification, piracy prevention methods of the type that forms a physical mark on the master disk will be referred to as master disk level methods.

Besides the above-described method, there has been proposed a more sophisticated master disk level method which involves forming a more complicated physical mark. On the other hand, a replica method is known that makes a replica having exactly the same physical features by melting the resin of a legitimate disk no matter how complicated the physical mark is made at the master disk level. This method requires much time and cost to produce one master disk, but since hundreds of thousands of disks can be produced from one pirated master disk, the cost per pirated disk is low. This has therefore given rise to the problem that as the replica method becomes widespread in the future, it may defeat the effectiveness of piracy prevention techniques at the master disk level.

As described above, the prior art piracy prevention techniques have several problems to be overcome.

These problems are summarized below.

Problem 1: The effectiveness of the master disk level piracy prevention techniques of the prior art is low since it is possible to replicate the physical mark.

Problem 2: In the prior art method that forms a physical mark based on physical mark design data, if a manufacturing apparatus of the same precision as the apparatus used by the legitimate disk manufacturer is obtained, illegal disks can be easily manufactured.

Problem 3: Since the security level provided by the prior art piracy prevention methods is fixed, its effectiveness decreases against constantly improving pirating techniques.

Problem 4: If a disk format without copy protection were allowed to exist along with a disk format with copy protection, pirated disks could be made with the disk format without copy protection. It has therefore been necessary to produce all disks with copy protection. The use of copy protection is therefore limited to closed specifications such as game disks.

Problem 5: According to the prior art methods, a limited number of licensing companies possess the special manufacturing apparatus and do not make the apparatus public. Therefore, software makers cannot make disks except at the licensing companies.

Problem 6: In the master-disk marking method, all disks pressed from the same master disk have the same disk ID. This means that all disks can be run by using

the same password. As a result, password security cannot be maintained unless a floppy disk or a communication line is used in combination. Furthermore, the password has to be entered each time the disk is used since secondary recording is not possible.

SUMMARY OF THE INVENTION

In view of the above-outlined problems of the prior art, it is an object of the present invention to achieve a greatly improved copy prevention capability as compared to the prior art.

More specifically, the present invention provides the following means to overcome the above-outlined six problems of the prior art piracy prevention methods.

To overcome Problem 1, a piracy prevention method involving the use of a physical mark at a reflective film level, rather than the master disk level physical mark as used in the prior art, is provided wherein the physical mark is formed on a reflective film of a disk. This prevents the production of pirated disks if duplication is made at the master disk level.

To overcome Problem 2, a new ROM-recording means is used that performs secondary recording to a two-disk laminated ROM disk by using a laser. In a first step, physical marks are randomly formed, and in a second step, the physical marks are measured with a measuring accuracy as high as 0.13 μ m. In a third step, their position information is encrypted and, using the secondary recording means, a barcode is recorded to the ROM disk with an accuracy of several tens of microns which is the usual processing accuracy. Optical mark position information can thus be obtained with an accuracy of, for example, 0.1 μ m much higher than the processing accuracy of a conventional apparatus. Since optical marks cannot be formed with the accuracy of 0.1 μ m by using commercially available equipment, production of pirated disks can be prevented.

To overcome Problem 3, both a first-generation cipher with a low degree of security and a second-generation cipher with a high degree of security, each enciphering the position information with a digital signature, are prerecorded on a medium and by using such a medium, piracy is prevented with the security corresponding to the applicable generation if the design of reproduction apparatus changes from one generation to the next.

To overcome Problem 4, an anti-piracy function identifier for indicating whether or not the software product is equipped with a copyright anti-piracy function is recorded on the master disk. To prevent the identifier from being altered, compressed information of software contents and the anti-piracy function identifier are scrambled and encrypted together when recording the software contents on the master disk. Since the identifier cannot be altered, pirates cannot produce disks with a disk format without anti-piracy measures. This prevents the production of pirated disks.

To overcome Problem 5, as a secret key for digital signature encryption indispensable for the manufacture of disks, a subkey is generated from a master key, and the subkey is delivered to each software maker, thereby allowing the software maker to manufacture legitimate disks at its own factory.

To overcome Problem 6, position information of an antipiracy mark of the invention, which differs from one disk to another, is used as a disk identifier. The position information and the disk serial number, i.e., the disk ID, are combined and encrypted together with a digital signature, thus appending an unalterable disk ID to each disk. Since each completed disk has a different ID, the password is also different. The password does not work on other disks. This enhances password security.

Also, with the secondary recording of the invention, the password is secondary-recorded on the disk, permanently making the disk an operable disk.

Specific methods for overcoming the above six problems are disclosed below by way of embodiments.

The invention provides a marking forming apparatus comprising: marking forming means for applying at least one marking to at least one reflective film formed to a disk; marking position detecting means for detecting at least one position of said marking; and position information output means for outputting said detected position as position information of said marking.

The invention also provides a marking forming apparatus further comprising position information writing means for writing at least said output position information or information concerning said position information to said disk or to a different medium.

The invention also provides a method of forming a laser marking to an optical disk, comprising the steps of: forming at least one disk; forming a reflective film to said formed disk; laminating two disks together, said disks including at least one disk with said reflective film formed thereon; and forming at least one marking by a laser on said reflective layer of the laminated disks.

The invention also provides a reproduction apparatus comprising: position information reading means for reading position information of at least one marking or information concerning said position information, said marking being formed to at least one reflective film formed to a disk and being detected for a position thereof, at least the position thus detected being output as said position information of said marking; marking reading means for reading information concerning at least one actual position of said marking; comparing/judging means for performing comparison and judgement by using a result of reading by said position information reading means and a result of reading by said marking reading means; and reproducing means for reproducing recorded data on said optical disk in accordance with a result of the comparison and judgement performed by said comparing/judging means.

The invention also provides a method of manufacturing an optical disk, comprising the steps of: forming at least one disk; forming a reflective film to said formed disk; applying at least one marking to said reflective film; detecting at least one position of said marking; and outputting said detected position as position information of said marking, and encrypting said information for writing to said disk.

The invention also provides a method of manufacturing an optical disk, comprising the steps of: forming at least one disk; forming a reflective film to said formed disk; applying at least one marking to said reflective film;

detecting at least one position of said marking; and outputting said detected position as position information of said marking, and applying a digital signature in relation to said position information for writing to said disk.

The invention also provides an optical disk wherein at least one marking is formed by a laser to at least one reflective film of the disk holding data written thereon and at least position information of said marking or information concerning said position information is written to said disk in an encrypted form or with a digital signature applied thereto.

The invention also provides an optical disk having a structure such that at least one reflective film is sandwiched directly or indirectly between two members formed from material resistant to laser light, wherein at least one marking is formed by a laser to said reflective film.

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File: CASES

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LEXIS-NEXIS
Library: PATENT
File: JNLS

?us5761301/pn

** SS 1: Results 1

Search statement 2

?prt full nonstop legalall

1/1 PLUSPAT - (C) QUESTEL-ORBIT

PN - US5761301 A 19980602 [US5761301]

TI - (A) Mark forming apparatus, method of forming laser mark on optical disk, reproducing apparatus, optical disk and method of producing optical disk

PA - (A) MATSUSHITA ELECTRIC IND CO LTD (JP)

IN - (A) GOTOH YOSHIHO (JP); OSHIMA MITSUAKI (JP)

AP - US56001595 19951117 [1995US-0560015]

PR - JP28341594 19941117 [1994JP-0283415]

- JP1615395 19950202 [1995JP-0016153]

- JP26124795 19951009 [1995JP-0261247]

IC - (A) H04K-001/00

EC - G11B-007/007

- G11B-007/26

- G11B-011/105P

- G11B-013/04C

- G11B-020/00P

ICO - S06F-001/00N1D2D

- S11B-007/00E

- S11B-007/00M3

- S11B-013/04C

PCL - ORIGINAL (O) : 705057000; CROSS-REFERENCE (X) : 235494000 369272000 380201000

DT - Corresponding document

CT - US5065429; US5191611; US5392351; US5400403; US5457668; US5457746; US5513169; EP0545472; EP553545; DE4308680; JP61-190734; JP63-46541; JP63-164043; JP2-44448; JP5-325193; JP5-266576; JP7-325712; NL9101358
- European Search Report dated May 15, 1997.

International Search Report dated Jan. 30, 1996.

STG - (A) United States patent

AB - An object of the present invention is to provide a marking forming apparatus, a method of forming a laser marking on an optical disk, a reproduction apparatus, an optical disk, and a method of manufacturing an optical disk, capable of providing a greatly improved copy prevention capability as compared to prior known construction. To achieve this object, in the optical disk of the invention, for example, a marking is formed by a laser on a reflective film of a disk holding data written thereon and at least position information of the marking or information concerning the position information is written on the disk in an encrypted form or with a digital signature appended thereto.

1/1 LGST - (C) LEGSTAT

PN - US 5761301 [US5761301]

AP - US 560015/95 19951117 [1995US-0560015]

DT - US-P

ACT - 19951117 US/AE-A

APPLICATION DATA (PATENT)

{US 560015/95 19951117 [1995US-0560015]}

- 19960410 US/AS02
ASSIGNMENT OF ASSIGNOR'S INTEREST
MATSUSHITA ELECTRIC INDUSTRIAL CO. LTD. 1006, OAZA KADOMA, KADOMA-SHI
OSAKA, JAP * OSHIMA, MITSUAKI : 19960220; GOTOH, YOSHIHO : 19960220
- 19980602 US/A
PATENT
- 20000801 US/RF
REISSUE APPLICATION FILED
20000602
UP - 2000-31

1/1 CRXX - (C) CLAIMS/RRX
PN - 5,761,301 A 19980602 [US5761301]
PA - Matsushita Electric Industrial Co Ltd JP
ACT - 20000602 REISSUE REQUESTED
ISSUE DATE OF O.G.: 20000801
REISSUE REQUEST NUMBER: 09/588364
EXAMINATION GROUP RESPONSIBLE FOR REISSUEPROCESS: 3642

Reissue Patent Number:

- 20011207 REISSUE REQUESTED
ISSUE DATE OF O.G.: 20020402
REISSUE REQUEST NUMBER: 10/017965
EXAMINATION GROUP RESPONSIBLE FOR REISSUEPROCESS: 3642

Reissue Patent Number:

- 20011207 REISSUE REQUESTED
ISSUE DATE OF O.G.: 20020409
REISSUE REQUEST NUMBER: 10/017973
EXAMINATION GROUP RESPONSIBLE FOR REISSUEPROCESS: 3642

Reissue Patent Number:

- 20011207 REISSUE REQUESTED
ISSUE DATE OF O.G.: 20020409
REISSUE REQUEST NUMBER: 10/020425
EXAMINATION GROUP RESPONSIBLE FOR REISSUEPROCESS: 3642

Reissue Patent Number:

- 20011207 REISSUE REQUESTED
ISSUE DATE OF O.G.: 20020409
REISSUE REQUEST NUMBER: 10/020427
EXAMINATION GROUP RESPONSIBLE FOR REISSUEPROCESS: 3642

Reissue Patent Number:

1/3 PAST - (C) PAST
AN - 200215-001677
PN - 5761301 A [US5761301]
OG - 2002-04-09
ACT - REISSUE APPLICATION FILED

2/3 PAST - (C) PAST
AN - 200214-001609
PN - 5761301 A [US5761301]
OG - 2002-04-02
ACT - REISSUE APPLICATION FILED

3/3 PAST - (C) PAST
AN - 200031-001336
PN - 5761301 A [US5761301]
OG - 2000-08-01
ACT - REISSUE APPLICATION FILED